

Remarks

In the Office Action dated July 16, 2003, the patent examiner rejected the claims of the present application under 35 U.S.C. § 103 over Telschow, et al., U.S. Patent No. 6,134,006, and in view of Hashima, et al., U.S. Patent No. 5,521,843.

The Telschow, et al., patent claims "a method for measuring and providing an image of periodic physical variations in an object of interest". The Examiner's attention is drawn to several distinguishing elements of Telschow, et al.'s claims and methods compared to the claims and methods in the present application.

1. It is an active technique, requiring the emission of coherent optical beams from a light source, and also requires precise knowledge of the wavelength of the light emitted by the source (see column 4, line 48 for example), unlike the present application which, preferably, is completely passive requiring no emission of optical beams.

2. It is based optical beam interferometry, i.e., the spectral properties of light, unlike the present application which relies on projective geometry, i.e., optical properties of light. Specifically, Telschow, et al., method utilizes the interference fringes that develop between two light beams (see column 12, line 64, for example), whereas the present application requires no such interference between optical beams.

3. It requires the object of interest to continuously vibrate, i.e., not decay over time (see column 5, line 27, for example), whereas the method in the present application can measure decaying vibrations.

4. It requires the object of interest to vibrate periodically at a single fixed frequency, i.e., not have any transient components or mixture of multiple vibration frequencies (see column 15, line 47, for example), whereas the method in the present application can handle any kind of vibration (periodic, transient, decaying, multi-frequency, etc.).

5. It requires approximate knowledge of the frequency of vibration of the object of interest (column 6, line 29-38, for example), whereas the method of the present application does not require any knowledge of the frequency of vibration.

6. It requires the object of interest to have a prepared surface that is either diffusive reflective, i.e., rough, or specular reflective, i.e., polished (see, column 8, lines 60-65), whereas the method in the present application does not require any surface preparation.

In summary, the method in the present application is completely different from that of Telschow, et al., and, as such, does not suffer many of the limitations of the Telschow method.

Hashima, et al., patent claims a "method of recognizing and tracking a target mark". The patent examiner's attention is drawn to several distinguishing elements of Hashima, et al.'s claims and methods compared to the claims and methods in the present application.

1. It is not a technique for measuring vibrations - no such claim is made - whereas, the method in the present application is specifically geared for measuring vibrations.

2. It is fundamentally a two-dimensional imaging and image processing technique, whereas the method in the present application does not require two-dimensional images and it works with mere single line images of targets attached to the vibrating object of interest.

In summary, although the method in the present application and that of Hashima, et al., both use projective geometry and easily visible targets attached to the object of interest, the target attributes of interest, the method for obtaining these attributes, and the application of the method itself are all different.

Furthermore, because the methods of Telschow, et al., and Hashima, et al., are fundamentally different, (i.e., the former is based on optical beam interferometry and the latter on projective geometry) there is no obvious way for one of ordinary skill in the art to combine the two methods. For example, attaching the targets in Hashima, et al. to the vibrating object of interest would have no effect on the interference fringes that develop between the light beams in Telschow, et al.'s method.

Consequently, in view of the above and in the absence of better art, Applicants' Attorney respectfully submits the application is in condition for allowance which allowance is respectfully requested.

Respectfully submitted,

Alan Argento, et al.

By



David R. Syrowik

Reg. No. 27,956

Attorney/Agent for Applicant

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BROOKS KUSHMAN P.C.
1000 Town Center, 22nd Floor
Southfield, MI 48075-1238
Phone: 248-358-4400
Fax: 248-358-3351